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FTP/E Dr.EW/fr

Patent Claims

- 5 1. Method for monitoring the traffic state in a traffic network with one or more effective bottlenecks, in particular in a road traffic network, in the case of which
- the traffic state is classified, taking account of
- 10 recorded traffic measured data for one or more traffic parameters which comprise at least information on the traffic intensity and/or the average vehicle speed, into in each case one of a plurality of state phases which comprise at least the state phases of "free
- 15 traffic" and "synchronized traffic",
- characterized in that
- the traffic state upstream of a respective effective bottleneck of the traffic network is classified, when an edge (F_s , F) fixed thereat is
- 20 detected between downstream free traffic (B_F) and upstream synchronized traffic (B_s), as a pattern, representative of the respective effective bottleneck, of dense traffic which includes one or more different regions (B_s , B_{Gs} , B_{St}) which are consecutive upstream, of
- 25 different state phase composition, and an associated profile of the traffic parameters taken into account for the state phase determination.
- 30 2. Method according to Claim 1, further characterized in that the traffic state is classified, when an individual pattern, arising initially at an associated, effective bottleneck, of dense traffic reaches one or more effective bottlenecks following upstream, in this route section as an overarching pattern, representative
- 35 of the included effective bottlenecks, of dense traffic which, like a respective individual pattern, includes

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one or more different regions, which are consecutive upstream, of different state phase composition, and an associated profile of the traffic parameters taken into account for the state phase determination.

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3. Method according to Claim 1 or 2, further characterized in that the respective pattern, belonging to one effective bottleneck or common, as overarching pattern, to a plurality of effective bottlenecks, of
10 dense traffic with its time-dependent and location-dependent traffic parameter profile is empirically determined from recorded traffic measured data and stored in a fashion which can be called up.

15 4. Method according to one of Claims 1 to 3, further characterized in that it is established for the respective bottleneck as a function of vehicle influx whether the pattern comprises only a region (B_s) of synchronized traffic or comprises this and a pinch
20 region (B_{cs}), adjoining upstream, or comprises these two regions and a region (B_{st}), adjoining upstream, of moving widespread congestion, the associated edge positions between the respective different state phases are determined, and each of the three pattern variants
25 is assigned a corresponding time-dependent and location-dependent profile of the average vehicle speed and/or the traffic flow and/or the traffic density.

5. The method according to one of Claims 2 to 4,
30 further characterized in that it is established for the traffic network as a function of the vehicle flows where and in what temporal sequence overarching patterns arise, in what temporal and spatial sequence the regions of "synchronized traffic", "pinch region"
35 and "moving widespread congestion" arise and develop in each of the overarching patterns, and whether overlaps of such regions take place, and for a respective overlap the temporal and spatial characteristic of

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congestion points through regions of synchronized traffic and/or congested synchronized traffic is predicted.

- 5 6. Method according to Claim 4 or 5, further characterized in that the temporal evolution of the edge positions ($F_{F,s}$, $F_{GS,s}$, $F_{F,GS}$, $F_{St,GS}$) of the various regions of the respective pattern of dense traffic, and/or the edge positions of congestion points inside
- 10 various overarching patterns, and/or the occurrence of a respective new overarching pattern is currently estimated and predicted for future points in time.
7. Method according to one of Claims 4 to 6, further
- 15 characterized in that the associated travel time to be expected is additionally currently estimated and/or predicted for future points in time for the respective individual or overarching pattern of dense traffic.
- 20 8. Method according to one of Claims 4 to 7, further characterized in that the current vehicle influx is detected for the respective individual or overarching pattern of dense traffic, and the current positions of the edges between the various pattern regions are
- 25 determined, and these current input data are used to select the best-fitting pattern profile from the stored pattern profiles and to use it as a basis for predicting the future traffic state in the relevant route region.